Dielectric Constant Tan Delta & Resistivity Test Set

Model DTR - 3K

CDR-500

OIL TEST CELL

OIL TEST CELL HEATER

FEATURES

- AC and DC test voltage switched internally. Single connector for both AC and DC output. Eliminates manual change over of connections to the sample under test.
- Direct digital display of test voltages.
- Auto ranging and direct digital reading of volume resistivity.
- Cell constant adjustment and Tan Delta Zero correction.
- Zero start on AC voltage for safety.
- Open Ground and Open Interlock with LED indication for operator safety.
- Gain Control for detector electronics.
- Built - in protection for test sample flash over
- Equipment is 19″ rack mount cum table top.

DESCRIPTION

The Dielectric Constant, Tan Delta & Resistivity Test Set has been specially designed to determine the Tan Delta, Dielectric Constant and Resistivity of transformer oil and other electrical insulating liquids using a guarded three terminal test cell. This may also be used for measurement of the above parameters of solid insulating materials using a guarded three terminal solid test cell.
There are built-in safety features which include zero start on voltage adjustment, auto trip with LED indication if two grounds are not connected, auto trip with LED indication if safety interlock is opened and built-in protection should the test sample flash over.

The ∈(Epsilon) - DF portion of the instrument operates as a manually balanced capacitance bridge. Since ∈ is ratio of the full cell capacitance to the empty cell Capacitance (in cm) must be dialed in or be balanced out by using the balancing procedure. The cell constant (in cm) equals 3.6 xπx1xC, where C is the cell Capacitance in pF. The bridge balance is accomplished with the aid of synchronous and phase sensitive null detector which allows easy and independent balancing of the ∈ and DF components. The ∈-DF tests are carried out w.r.t. line frequency.

The Resistivity meter is autoranging with the reading displayed on 3½ digit DPM. Once the cell Constant is balanced with the cm dial, the Resistivity meter reads volume Resistivity directly in ohm-centimeters. With the cm dial set to 1000, the Resistivity meter reads resistance in ohms by a factor of 1000. The autoranging feature eliminates the need for selecting the right range manually .

DTR 3K SPECIFICATIONS

RANGES

Dielectric Constant	:	1 to 13
Tan Delta	:	10^{-5} to 10
Resistivity	:	Autoranged from 10^{9} to 10^{15} ohm cm

ACCURACY

Dielectric constant	:	±0.2% of reading ± 0.001
Tan Delta	:	±1% of reading ± 0.3% FS (direct reading, linear throughout the ranges)
Resistivity	:	±3% of reading ±0.2% FS linear

RESOLUTION

Dielectric Constant	:	0.001 over the entire range.
Tan Delta	:	0.00001 in 10^{-5} range 0.0001 in 10^{-4} range 0.001 in 10^{-3} range 0.01 in 10^{-2} range
Resistivity	:	0.01 of each range.
CELL CONSTANT	:	3 digit adjustment for Tan Delta zero and Capacitance (cm) Any cell or test fixture between 50-70pF can be used.
TEST VOLTAGE	:	Internally generated
Dielectric Constant & Tan Delta	:	0-3000V AC, in two ranges (0-1000V & 0-3000V)
Resistivity	:	+500 V DC-Fixed
POWER SUPPLY	:	230 V AC ±10%, 50Hz, OR 110 V AC ±10%, 60Hz, 150 VA.
Temperature Range & Humidity	:	-10^{O}C to 50^{O}C Ambient to 90% RH
DIMENSION	:	19" standard rack mount chassis.
WEIGHT	:	Approx. 17 kgs.

ESSENTIAL ACCESSORIES

OIL TEST CELL HEATER

The Oil Test Cell Heater OCH-85 is a very compact unit and is used to heat the oil in the cell to the required temperature. This uses high frequency induction heating which raises the temperature to 90^{O} C in 15 mins approximately. A knob and a dial are provided to set the temperature at required level. A temperature sensing probe is supplied and this senses the temperature and stops heating the oil once the set temperature is reached. Two LEDs are provided to indicate 'heating on' and 'heating off'. To ensure safety the built-in micro switch interlock automatically trips out the high voltage when the plexi cover of the heater is raised.

SPECIFICATIONS

Power supply	:	230 V AC ±10%, 50 Hz OR 110 V AC ± 10%, 60 Hz, 200VA
Temperature Range	:	20 -110^{O} C
Accuracy of Temperature Control	:	±2^{O} C
Dimension	:	310 x 190 x 300mm
Weight	:	Approx 12 kgs

OIL TEST CELL

This 3 Terminal Oil Test Cell is designed for routine and laboratory Tan Delta tests on transformer oils and other electrical insulating liquids.The electrode of the cell is designed with a spherical bottom which offers more uniform stress on the oil as compared to electrode with tapered end.

SPECFICATIONS

Construction	:	3 terminal configuration
Material	:	Stainless Steel Body (SS 316) with Teflon spacers
Capacitance	:	50-70pF
Electrode spacing	:	2mm
Max. test Voltage	:	2.4 kV AC & 1kV DC
Volume	:	60ml
Dimension	:	90mm X 195mm
Weight	:	Approx 2.5Kgs

C-DF & RESISTANCE STANDARD

The Standard box is used to routinely check and inspect the Test Set. This offers one Capacitance, three Tan Delta and four Resistivity values. The maximum operating voltage is 500V AC / DC.

OTHER PRODUCTS

- Manual & Automatic Transformer Ratio Meters.
- Digital Micro Ohm Meters with built in 100Amp source.
- Manual & Automatic Transformer Winding Resistance & On Load Tap Changer Test sets.
- Automatic CT/VT Test Sets & Systems.
- Automatic 12 kV & 5 kV Capacitance & Tan Delta Test Sets.
- Relaying Current Transformer Analyser.

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